

AE、Dst 頻度分布と太陽風

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AE and Dst distribution and solar wind

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Storm-substorm relationship connecting to the solar wind-magnetosphere coupling process has been one of essential problems in the magnetospheric physics. We revisit the storm-substorm relationship on the basis of the statistical analysis of AE, Dst, epsilon and Em using OMNI data base in 1995 and 2000. The intensity distribution of AE and Dst for a year is compared with that of epsilon and Em parameters in the solar wind.

The results showed that

- 1). Dst and substorm related AE show linear relationship
- 2). Epsilon spectrum shows a kind of power law distribution.
- 3). AE spectrum shape of <500 nT is parallel to that of epsilon spectrum, indicating that auroral electrojet is closely affected by epsilon parameter compared with Em parameter.
- 4). AE spectrum of >500 nT declines faster than epsilon spectrum, suggesting that the magnetosphere responds non-linearly to the strong input of solar wind energy.